

1 WHAT IS CLAIMED IS:

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3 1. A bi-directional optical transceiver for simultaneously transmitting n channels
4 of n different wavelengths and receiving m channels of m different wavelengths through a
5 single fiber optic cable comprising:

6 an optical block having a flat upper surface and a flat lower surface,
7 a reflective coating carried by said upper surface of said optical block,
8 a plurality of m filters carried on said flat lower surface of said optical block, said
9 filters adapted to separately filter said m different wavelengths,

10 a plurality of m photodetectors wherein each of said m photodetectors is optically
11 aligned with one of said m filters to receive one of said m channels through one of said m
12 filters,

13 a plurality of n beam splitters on said flat lower surface of said optical block, and
14 a plurality of n transmitting lasers, each having a separate wavelength, wherein
15 each of said n lasers is optically aligned with one of said n beam splitters.

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17 2. The apparatus of claim 1 wherein n is 2, m is 2, and wherein only one transmitter
18 and one photodetector are turned on, thereby creating a built-in redundancy of the
19 transceiver.

1 3. A bi-directional optical transceiver for simultaneously transmitting n channels
2 of n different wavelengths and receiving m channels of m different wavelengths through a
3 single fiber optic cable, and wherein said n wavelengths are different from said m
4 wavelengths, comprising:

5 an optical block having a flat upper surface and a flat lower surface,
6 a reflective coating carried by said upper surface of said optical block,
7 a plurality of $m+n$ filters carried on said flat lower surface of said optical block,
8 said filters adapted to separately filter said $m+n$ different wavelengths,
9 a plurality of m photodetectors wherein each of said m photodetectors is optically
10 aligned with one of said m filters to receive one of said m channels through one of said m
11 filters, and

12 a plurality of n transmitting lasers, each having a separate wavelength, wherein
13 each of said n lasers is optically aligned with one of said n filters.

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15 4. The apparatus of claim 1 wherein n is 2 and m is 2.
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